We claim:

1   1.   A method for lighting an inductive plasma in a plasma
2   processing apparatus having a matching network, the method
3   comprising the steps of:
4   determining a matching condition under which the matching
5   network is tuned to a capacitive plasma;
6   presetting the matching network at the matching condition
7   determined in said determining step;
8   lighting a capacitive plasma in accordance with the preset
9   matching condition and at a desired power exceeding a power
10   required to maintain the capacitive plasma by an excess power;
11   and
12   allowing an inductive plasma to light due to the excess
13   power.

1   2.   A method according to claim 1, wherein the plasma lit in
2   said lighting step is a second plasma, and said determining
3   step further comprises:
4   lighting a first plasma;
5   setting a power delivered to the first plasma at not more
6   than about 20 watts;
7   allowing the matching network to tune to the first plasma
8   as a capacitive plasma; and
9   recording the matching condition under which the matching
10   network is tuned to the first plasma.

1   3.   A method according to claim 1, wherein the plasma
2   processing apparatus includes a coil for delivering power to
3   the plasma, and a current produced in the coil due to the
4   excess power causes the inductive plasma to light.

1 4. A method according to claim 1, wherein the matching
2 condition determined in said determining step is a condition
3 under which the capacitive plasma is maintained in a steady
4 state.

1 5. A method according to claim 1, wherein the inductive plasma
2 is lit in a chamber of the plasma processing apparatus having a
3 gas pressure in the range of approximately 0.3 mTorr to 20
4 mTorr.

1 6. A method according to claim 1, wherein after said lighting
2 step, the matching network changes from the preset matching
3 condition to a matching condition under which the matching
4 network is tuned to the inductive plasma.

1 7. A method according to claim 1, wherein the desired power is
2 greater than about 20 watts.